



UNITED STATES DEPARTMENT OF COMMERCE  
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SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
07/910,133	07/14/93	HEIKKILA	H 85940/11

  

ART UNIT	PAPER NUMBER
1808	14

18N2/0509

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EXAMINER

ART UNIT

PAPER NUMBER

1808

05/09/94

DATE MAILED:

This is a communication from the examiner in charge of your application.  
COMMISSIONER OF PATENTS AND TRADEMARKS

- ☒ This application has been examined ☐ Responsive to communication filed on \_\_\_\_\_ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), -0- days from the date of this letter.  
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- ☒ Notice of References Cited by Examiner, PTO-892.
- ☒ Notice of Draftsman's Patent Drawing Review, PTO-948.
- ☐ Notice of Art Cited by Applicant, PTO-1449.
- ☐ Notice of Informal Patent Application, PTO-152.
- ☒ Information on How to Effect Drawing Changes, PTO-1474.
- ☐

Part II SUMMARY OF ACTION

- ☒ Claims 1-14 are pending in the application.  
Of the above, claims \_\_\_\_\_ are withdrawn from consideration.
- ☐ Claims \_\_\_\_\_ have been cancelled.
- ☐ Claims \_\_\_\_\_ are allowed.
- ☒ Claims 1-14 are rejected.
- ☐ Claims \_\_\_\_\_ are objected to.
- ☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.
- ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
- ☐ Formal drawings are required in response to this Office action.
- ☐ The corrected or substitute drawings have been received on \_\_\_\_\_. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).
- ☐ The proposed additional or substitute sheet(s) of drawings, filed on \_\_\_\_\_, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
- ☐ The proposed drawing correction, filed \_\_\_\_\_, has been ☐ approved; ☐ disapproved (see explanation).
- ☐ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. \_\_\_\_\_; filed on \_\_\_\_\_.
- ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
- ☐ Other

EXAMINER'S ACTION

The Group and/or Art Unit location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Group Art Unit 1808.

5 The papers filed April 26, 1994 have been received. The newly submitted Declaration is defective in that alterations have been made which have not been initialed and dated. Therefore, a new oath is required. Note the time period set forth in the Decision on Petition 04 Jan 1994. The FAXed copy does not  
10 clearly indicate the date of the Certificate of Mailing. Upon further communication with the Office please supply a clean copy of the paper signed by Kenneth Madsen on 3/4/94.

Claims 1-14 are pending in the application.

15 The specification lacks the section "Brief Description of the Drawings". Correction is required.

The disclosure is objected to because of the following informalities: taxonomic names of microorganisms need to be either underlined or italicized (specification and claims); "xylane" is incorrect (specification and claims). Please review  
20 the specification for other informalities. Appropriate correction is required.

25 It is noted that the Candida tropicalis, i.e. ATCC 9968, required to practice the claimed invention is currently available from the ATCC. It appears that this strain should remain available to the public beyond the effective life of the patent.

Any information to the contrary which comes to applicants' attention during the prosecution of this application must be entered into the record or otherwise be brought to the attention of the Office by applicants.

5           Claims 1-14 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10           The claims are vague and indefinite in their recitation of "characterized in that". Judicially preferred terminology is "comprising", "consisting of", and "consisting essentially of". Examples are not allowed in claim language, e.g. "such as ..." and "preferably...".

15           Dependent claims must refer to the independent claim in a definite manner, e.g. "The process according to Claim 1.....".

20           The claims require a positive recitation of steps. Additionally, Claim 1 lacks antecedent basis for "the starting material" and "the remaining xylitol solution". The claim is confusing in that the yeast strain is capable of converting "the free hexoses present to ethanol and yeast".

25           In Claim 2 it is unclear as to what applicants intend by "the starting material is extracted". The claim lacks clear antecedent basis for "the extracted solution", "the xylitol solution", "the extracted mass", and "said mass". Claim 2 is further confusing in that Claim 1 is directed to a process of

simultaneous production of xylitol and ethanol yet claim 2 does not appear to be directed to such a process.

Claims 3 and 4 are vague and indefinite in their recitation of "is used as a starting material". Do applicants intend  
5 "wherein .... is the starting material"?

Claim 5 lacks clear antecedent basis for "the xylitol-rich fraction..."

Claim 6 lacks antecedent basis for "the distillation".

Claim 11 lacks antecedent basis for "the hydrolysis". It is  
10 unclear what applicants intend by "enzymatic final hydrolysis"

Claim 12 is unclear in its recitation of "using a". It is suggested that "using a" be deleted. The claim lacks antecedent basis for "the stationary phase".

The following is a quotation of the appropriate paragraphs  
15 of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --  
20 (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

25 A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that  
30 the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5 Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

10 Claims 1-14 are rejected under 35 U.S.C. § 102(b) as being anticipated by Heikkila et al. WO 90/08193.

'193 teaches applicants' invention.

Claims 1-14 are rejected under 35 U.S.C. § 103 as being unpatentable over Jeffries or Lohmeier-Vogel et al. in view of Jaffe U.S. Pat. 3627636 and Onishi et al. U.S. Pat. No. 3619369.

15 Applicants' claims are drawn to a fermentation process of producing xylitol and ethanol from hydrolyzed lignocellulosic material by yeast. The ethanol is recovered and the xylitol is recovered by chromatography.

20 Jeffries teaches a fermentation process of producing xylitol and ethanol from hydrolyzed lignocellulosic material, including the designated xylan containing lignocellulosic material, by the designated Candida.

25 Lohmeier-Vogel et al. teach a fermentation process of producing xylitol and ethanol from hydrolyzed lignocellulosic material by the designated Candida.

'636 and '369 are cited for their disclosures of the recovery of xylitol from a fermentation broth by a cation-exchange resin. The isolated xylitol is crystallized. The cited

references also disclose the separation of the yeast during the recovery steps. '369 further discloses the designated D. hansenii.

5 The designated hydrolysis steps, i.e. steam explosion and enzymatic hydrolysis, are conventional in the art for the preparation of lignocellulosic material for fermentation. Alcohol recovery by distillation is standard as is the use of waste sulfite liquor as a substrate.

10 The cited references make clear that a process for the production of xylitol and ethanol from lignocellulosic materials by yeast is old as are the methods of recovery, i.e. distillation of ethanol and chromatography and crystallization of xylitol.

15 The claims fail to patentably distinguish over the state of the art as represented by the cited references. Therefore, the rejection under 35 U.S.C §103 is proper.

No claim is allowed.

20 Any inquiry concerning this communication should be directed to Marian Knode at telephone number (703) 308-0196 .

*Marian Knode*

MARIAN KNODE  
PRIMARY EXAMINER  
GROUP 1800